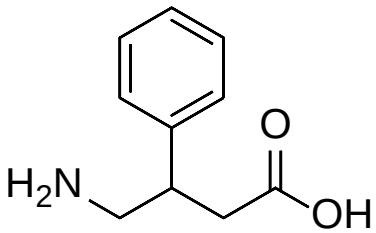
Product data sheet

MedKoo Cat#: 584435 Name: Phenibut CAS: 1078-21-3 Chemical Formula: $C_{10}H_{13}NO_2$ Exact Mass: 179.0946 Molecular Weight: 179.219	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.



1. Product description:
Phenibut, a GABA analogue, is a central nervous system depressant with anxiolytic and sedative effects.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	35.0	195.29

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	5.58 mL	27.90 mL	55.80 mL
5 mM	1.12 mL	5.58 mL	11.60 mL
10 mM	0.59 mL	2.79 mL	5.58 mL
50 mM	0.11 mL	0.59 mL	1.12 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Irie T, Yamazaki D, Kikura-Hanajiri R. F-phenibut (β-(4-Fluorophenyl)-GABA), a potent GABAB receptor agonist, activates an outward-rectifying K+ current and suppresses the generation of action potentials in mouse cerebellar Purkinje cells. Eur J Pharmacol. 2020 Oct 5;884:173437. doi: 10.1016/j.ejphar.2020.173437. Epub 2020 Jul 28. PMID: 32735986.
2. Belozertseva I, Nagel J, Valastro B, Franke L, Danysz W. Optical isomers of phenibut inhibit [H(3)]-Gabapentin binding in vitro and show activity in animal models of chronic pain. Pharmacol Rep. 2016 Jun;68(3):550-4. doi: 10.1016/j.pharep.2015.12.004. Epub 2015 Dec 22. PMID: 26894962.

In vivo study

1. Vavers E, Zvejniece L, Svalbe B, Volska K, Makarova E, Liepinsh E, Rizhanova K, Liepins V, Dambrova M. The neuroprotective effects of R-phenibut after focal cerebral ischemia. Pharmacol Res. 2016 Nov;113(Pt B):796-801. doi: 10.1016/j.phrs.2015.11.013. Epub 2015 Nov 24. PMID: 26621244.
2. Zvejniece L, Vavers E, Svalbe B, Veinberg G, Rizhanova K, Liepins V, Kalvinsh I, Dambrova M. R-phenibut binds to the α2-δ subunit of voltage-dependent calcium channels and exerts gabapentin-like anti-nociceptive effects. Pharmacol Biochem Behav. 2015 Oct;137:23-9. doi: 10.1016/j.pbb.2015.07.014. Epub 2015 Jul 31. PMID: 26234470.

7. Bioactivity
Biological target:
Phenibut, a GABA analogue, is a central nervous system depressant with anxiolytic and sedative effects.

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In vitro activity

The present study compared the potency of F-phenibut, phenibut, and the $GABA_B$ agonist (±)-baclofen (baclofen) using in vitro patch-clamp recordings obtained from mouse cerebellar Purkinje cells slice preparations. These findings indicate that F-phenibut acted as a potent $GABA_B$ agonist. EC_{50} of outward current density evoked by the three $GABA_B$ agonists decreased in the following order: phenibut (1362 μM) > F-phenibut (23.3 μM) > baclofen (6.0 μM). Moreover, F-phenibut suppressed action potential generation in Purkinje cells.

Reference: Eur J Pharmacol. 2020 Oct 5;884:173437. https://pubmed.ncbi.nlm.nih.gov/32735986/

In vivo activity

The aim of the present study was to test the effects of R-phenibut on the motor, sensory and tactile functions and histological outcomes in rats following transient middle cerebral artery occlusion (MCAO). R-phenibut treatment at a dose of 50mg/kg significantly alleviated reduction of brain volume in damaged hemisphere in both f-MCAO and ET1-MCAO. In R-phenibut treated animals a trend of recovery of tactile and proprioceptive stimulation in the vibrissae-evoked forelimb-placing test was observed. After R-phenibut treatment at a dose of 50mg/kg statistically significant increase of BDNF and VEGF gene expression was found in damaged brain hemisphere.

Reference: Pharmacol Res. 2016 Nov;113(Pt B):796-801. https://pubmed.ncbi.nlm.nih.gov/26621244/